

REMARKS

The Office Action mailed September 7, 2004, has been received and reviewed. Claims 25 through 41 are currently pending in the application. Claims 25 through 41 stand rejected. Applicant have canceled claims 27 and 28, and amended claims 25, 26, 32-37, 40, and 41, and respectfully request reconsideration of the application as amended herein.

35 U.S.C. § 102(e) Anticipation Rejections

Anticipation Rejection Based on U.S. Patent No. 6,377,093 to Lee et al.

Claims 25 through 41 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Lee et al. (U.S. Patent No. 6,377,093). Applicants respectfully traverse this rejection, as hereinafter set forth.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Regarding claim 25, in referring to the Lee et al. reference, the Office Action states that “a second phase difference is determined between an inverse clock signal FCLK12 and a second delayed clock signal ICLK2 in TDC1011(column 5, lines 37-40). **FCLK12 is an inverse clock signal because for any clock signal there exists an inverse of that clock signal.** This phase difference signal is used to control the variable delay circuit 1017 (column 10, lines 25-27).” Applicants respectfully submit that this is not what is recited in claim 25.

The Office Action, states that “**for any clock signal there exists an inverse of that clock signal.**” While that may be true, a significant aspect of the present invention is to adjust the duty cycle of an internal clock to match that of a reference clock as taught, at page 8, lines 6-10, in the present application by the statement; “with a second phase detector 74 and delay circuit 84, despite timing cycle dependant variations in delay elements affecting the primary clock signal adjustments through DLL delay elements 58, a signal which has been skewed to a 40/60 duty

cycle from a 55/45 duty cycle may be corrected back to a 55/45 duty cycle for better performance at high speeds.”

This duty cycle adjustment aspect of the present invention was recited in claim 25 as, “determining a second phase difference between an inverse clock signal and a second delayed clock signal to establish a second delay magnitude.” In an effort to clarify this aspect of the present invention, Claim 25 is amended herein to rename the element “second delayed clock signal” to “inverted delayed clock signal.” In addition, Applicants amend “delaying the first delayed clock signal by the second delay magnitude” to “inverting and delaying the first delayed clock signal by the second delay magnitude.” These amendments clarify that the second phase difference is performed between the inverse clock signal and the inverted delayed clock signal. This second phase difference allows the internal clock duty cycle (i.e. delayed clock signal relative to inverted delayed clock signal) to be adjusted to match the reference clock duty cycle (i.e. clock signal relative to inverse clock signal) independent of the adjustment of the internal clock phase to match the reference clock phase.

Applicants can find no teachings in the Lee et al. reference to duty cycle adjustment, phase matching to inverted versions of clocks, or phase matching of falling edges of the clocks. Furthermore, FIG. 4 of the Lee et al. reference, showing details of the TDC 1011 element, does not show inversion of either FCLK11 or ICLK1. Finally, Applicants can find no reference to which edge of the various clocks is used for phase comparisons in the Lee et al. reference. Therefore, it seems apparent to Applicants that, in the Lee et al. reference, a person of ordinary skill in the art would infer that the second phase difference determined by TDC 1011 is performed using the same edge (i.e. rising or falling) of the various clock signals as is used in phase detector 1003.

Therefore, each and every element as set forth in amended claim 25 is not described, either expressly or inherently, in the Lee et al. reference as required for a 32 U.S.C. §102(e) rejection. Specifically, the claimed element of “determining a second phase difference between an inverse clock signal and an inverted delayed clock signal to establish a second delay magnitude,” is not set forth in the Lee et al. reference. Particularly when the “second delay magnitude” is used to “generate the second inverted delayed clock signal substantially

synchronized to the inverse clock signal,” as further recited in amended claim 25. As a result, amended claim 25 is now allowable and Applicants respectfully request that the rejection of claim 25 be withdrawn.

Regarding claim 26, claim 26 is amended herein to rename the element “second delayed clock signal” to “inverted delayed clock signal.” Claim 26 depends from now allowable amended claim 25. Therefore, claim 26 is now allowable and Applicants respectfully request that the rejection of claim 26 be withdrawn.

Regarding claims 27 and 28, claims 27 and 28 are canceled.

Regarding claim 29-32, claim 32 is amended herein to rename the element “second delayed clock signal” to “inverted delayed clock signal.” Claims 29-32 depend, either directly or indirectly, from now allowable amended claim 25. Therefore claims 29-32 are now allowable and Applicants respectfully request that the rejection of claims 29-32 be withdrawn.

Regarding claim 33, claim 33 is amended to replace the element of “a pair of second delayed clock signals,” with “an inverted delayed clock signal.” In addition, the argument asserted above for claim 25, relating to duty cycle adjustment, is equally applicable to claim 33. Specifically, the element of “generating the at least one second control signal by phase comparing an inverse clock signal and an inverted version of the timing signal,” is not set forth, either expressly or inherently, in the Lee et al. reference. As a result, amended claim 33 is now allowable and Applicants respectfully request that the rejection of claim 33 be withdrawn.

Regarding claim 34, claim 34 is amended herein to simplify the claim and correlate the subject matter of claim 34 with the amendments made to claim 33, from which claim 34 depends. Because claim 34 depends from now allowable amended claim 33, claim 34 is now allowable. Therefore, Applicants respectfully request that the rejection of claim 34 be withdrawn.

Regarding claim 35, claim 35 depends from now allowable amended claim 34. Therefore, claim 35 is now allowable and Applicants respectfully request that the rejection of claim 35 be withdrawn.

Regarding claim 36, claim 36 is amended herein to rename the element of “second delayed clock signal”, to “inverted delayed clock signal.” In addition, the argument asserted above for claim 25, relating to duty cycle adjustment, is equally applicable to claim 36. Specifically, the element of “a second phase detector configured to generate at least one second control signal related to a second phase comparison of an inverse clock signal and an inverted delayed clock signal,” is not set forth, either expressly or inherently, in the Lee et al. reference. As a result, amended claim 36 is now allowable and Applicants respectfully request that the rejection of claim 36 be withdrawn.

Regarding claim 37-39, claim 37 is amended herein to rename the element “second delayed clock signal” to “inverted delayed clock signal.” Claims 37-39 depend, either directly or indirectly, from now allowable amended claim 36. Therefore claims 37-39 are now allowable and Applicants respectfully request that the rejection of claims 37-39 be withdrawn.

Regarding claim 40, claim 40 is amended herein to rename the element of “second delayed clock signal”, to “inverted delayed clock signal.” Amended claim 40 includes, among other things, all the claim limitations of now allowable amended claim 36. Therefore, claim 40 includes allowable subject matter and Applicants respectfully request that the rejection of claim 40 be withdrawn.

Regarding claim 41, amended claim 41 includes, among other things, all the claim limitations of now allowable amended claim 36. Therefore, claim 41 includes allowable subject matter and Applicants respectfully request that the rejection of claim 41 be withdrawn.

ENTRY OF AMENDMENTS

The amendments to claims 25, 26, 32-37, 40, and 41 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application. Further, the amendments do not raise new issues or require a further search.

CONCLUSION

Claims 25, 26, and 29-41 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,



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